# The Ohio State University Neurology Newsletter - 2023

### Message from the Chair

In this newsletter, we are thrilled to share the milestones achieved by OSU Neurology in FY23. After reading the articles below, I am confident that you will agree that our tripartite mission continues to advance along a steep positive trajectory that is unprecedented in our department's history! In spite of the pandemic, our faculty grew from 46 to 75 over the past three years. We welcomed 16 new colleagues this past year alone (featured on page 9)! The new faculty span all 14 of our subspecialty divisions, including our newest, state-of-the-art divisions that are dedicated to *Neurogenetics*, *Neurology Health Services Research*, and *Neuropsychology & Cognitive Well Being*. Our dynamic, diverse and talented faculty, as well as our incredible staff and learners, are the engine that drives the innovations described on the following pages.

Our growth is further reflected in the introduction of **21** personalized and multidisciplinary clinics (listed on page 5), that offer cutting edge, holistic neurological diagnostic services and care, by leveraging exceptional teams of subspecialty trained neurologists and complementary providers. Our most recently developed clinics are focused on patients with *Young Onset Dementia, Functional Movement Disorders, Neuro-rheumatological Conditions*, and *Neurocutaneous Syndromes*, respectively. I am very proud of the new *Columbus Free Neurology Clinic*, staffed by residents and medical students, and overseen by volunteer faculty, which provides neurological care to uninsured individuals in our community. We now see patients at **8** ambulatory care locations, including brand new facilities in the nearby suburbs of Dublin and New Albany. On the inpatient side, we initiated a consultation service for neurological complications of cancer immunotherapy, and expanded our neurohospitalist team to **7** providers. Our Telestroke Network is one of the largest and busiest in the country, with **29** spoke hospitals. To complement that service, we recently launched a well-received Teleneurology Network that provides virtual inpatient consultations for non-vascular neurological conditions to community hospitals throughout central Ohio.

Our learners are exceptional! In 2021 we increased the number of residents in our program from **6 to 8** trainees per year, and we now offer **10** advanced subspecialty clinical fellowships. All of our residents are engaged in research projects with a dedicated research mentor. Our trainees are highly involved in our multipronged DEI initiatives, including a quarterly journal club focused on health care disparities in Neurology. In terms of research, we have also been busy. Our department conducted approximately **160** clinical trials and translational studies, enrolled over **400** subjects in our biorepository, and tripled NIH funding. I'd like to reiterate that none of these accomplishments would be possible without a culture that prioritizes team work, inclusion, civility and imagination. I hope you take a few moments to find out more details below. We look forward to all that lies ahead of us in 2023 and beyond! Go Bucks!



Dr. Benjamin Segal Chair, Department of Neurology



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# **Department Highlights**



- OSU Neurology & Neurosurgery was ranked #29 in the nation in the 2022 US News and World Report survey. We received top distinctions in 30-Day Survival, Discharging Patients to Home, Number of Patients, Nurse Staffing, Advanced Technologies, and Patient Services.
- Our department is committed to building a strong culture of inclusivity, civility and empathy, and cultivating the talents and aspirations of our faculty, staff and learners. As a result of concerted efforts to provide a supportive, just and nurturing environment, Neurology received the 2nd highest engagement score on the Breakthrough Survey across the entire Ohio State College of Medicine in 2022. This reflects our faculty's and staff's high levels of enthusiasm, spirit of comradery, and dedication to our tripartite mission.
- Last fall, we welcomed an additional 16 faculty members to our department, representing our most prolific year of recruitment yet! Our new team members have already made a significant impact in improving patient access and extending the breadth of our specialty clinics. The new faculty populate multiple divisions and centers, including Movement Disorders, Teleneurology and Neurohospitalist Medicine, Neurocritical Care, Multiple Sclerosis, Headache, Neuromuscular Disorders, Neuropsychology, and Research.
- Our ambulatory operations continued to expand in 2022, in part facilitated by the opening of Outpatient Care Dublin. Ambulatory arrived visits in Neurology grew for the **4th** straight year in a row.
- Our department initiated a new monthly "Breakfast and Learn" lecture series for our clinic managers, medical assistants and patient representatives. Faculty and APP leaders from each subspecialty division give interactive talks about the diagnosis and management of neurological conditions, focusing on the particular needs of individual patient subpopulations. The goals of this series are to raise awareness about the challenges faced by the patients we all serve, increase empathy, and strengthen communication between faculty and staff.
- Our department realized its 5th straight year of fiscal growth in net assets from clinical operations, as we continue to outperform financial projections.
- Over the past year, we have recruited additional faculty across all of our 5 newest, novel divisions and centers: Neurology Health Services Research, Teleneurology and Neurohospitalist Medicine, Neuropsychology and Neurocognitive Wellness, Neurogenetics, and the Neurobiology of Aging and Resilience Research Center.
- Our new Teleneurology network has expanded at a fast rate since its launch 1 year ago. At present, we have three contracted health systems in the network, and more contracts under active negotiation. We are in the process of developing Tele-EEG as an additional service. In addition, our Telestroke volumes have reached new heights. The OSU Telestroke team replied to 5368 calls and 2754 "beam ins" in FY22 alone.
- In 2022, the ACGME approved our application to increase our resident class size from 6 to 8 trainees per year. Last year we were successful in recruiting an additional 3 residents to our PGY-2 class, while welcoming our first PGY1 class of 8 residents. Of the 8 new PGY1 residents, 5 are OSU College of Medicine graduates!
- Our educational programming continues to develop. This year we are starting a week long bootcamp for PGY1 residents, with laboratory simulations of
  neurological emergencies and demonstrations of the neurological exam by subspecialists. Last year we introduced a new panel of specialty focused
  outpatient rotations for our residents. Each rotation has a formal curriculum with tailored reading lists and case conference meetings. The rotations include
  Neuroimmunology/MS, Headache and Neuropathic Pain, Epilepsy, Neuromuscular Disorders, Memory Disorders, Movement Disorders, and
  Neuromodulation service lines.
- Neurology has one of the largest clinical research portfolios in the College of Medicine. At present, we have 158 active clinical trials and studies (40 government sponsored, 118 industry sponsored). This represents a historical record for our department.

# **Multidisciplinary and Specialty Clinics**



Over the last three years, our department developed and implemented 21 unique multidisciplinary/subspecialty clinics which focus on subpopulations of patients with rare, as well as common, neurological disorders. These clinics offer sophisticated diagnostic testing, in addition to highly coordinated, personalized, and holistic clinical management. All of our multidisciplinary clinics (Parkinson's Disease, Multiple Sclerosis, ALS/ Motor Neuron Disorders, Muscular Dystrophy, Huntington's, Young Onset Dementia, Myositis) leverage a cross-functional team of complementary providers who have a high level of expertise and experience in the diagnosis and treatment of specific Neurology patient populations. In addition to subspecialty trained neurologists and pharmacists, they are staffed by dedicated physical, occupational and speech therapists. When appropriate, the team also includes genetic counselors, psychotherapists, neuropsychologists, sleep medicine/ fatigue specialists, neuro-ophthalmologists, and/ or respiratory therapists. The immediate goal of the clinical team is to collectively develop an individualized, comprehensive care plan that addresses a broad range of symptoms, as well as lifestyle behaviors, and social factors. Over the last fiscal year, we introduced four brand new clinics:

**Myositis Clinic:** Multidisciplinary clinic focused on the evaluation and treatment of patients with autoimmune inflammatory muscle diseases such as dermatomyositis, polymyositis, inclusion body myositis and immune mediated necrotizing myopathies. The clinic team includes a neuromuscular neurologist, rheumatologist, physical therapist, respiratory therapist, dietitian, and clinical pharmacist.

**Multidisciplinary Parkinson's Clinic:** Intended for established patients with Parkinson's Disease and related disorders. It is staffed by a Movement Disorders specialist, genetic counselor, social worker, and neurospychologist, along with physical, occupational, and speech therapists.

#### Multiple Sclerosis Multidisciplinary Symptom Management Clinic:

Multidisciplinary clinic for the established MS patients which entails evaluation and treatment by dedicated physical therapists, neuropsychologists, social workers, pharmacists, a neurophthalmologist, and Sleep Medicine/ Fatigue specialist. When indicated, special tests are administered (optical coherence tomography, fundoscopic imaging, bladder scan, quantitative strength and dexterity measurements).

**Young Onset Dementia Clinic:** Multidisciplinary clinic for patients with dementia who are younger than 65 years old. It is staffed by a neuropsychologist, speech therapist, genetic counselor, nurse practitioner, social worker and cognitive physician.

# **Full List of Offerings**

- Ataxia Clinic
- Movement Disorders
   Neuromodulation Clinic
- Parkinson's Disease Multidisciplinary Clinic
- Functional Movement Disorders Clinic
- Huntington's Disease Center Multidisciplinary Clinic
- Young Onset Dementia Clinic
- Epilepsy Pregnancy Clinic
- Epilepsy Transition Clinic
- Psychogenic Non-Epileptic Event (PNEE) Clinic
- Aging with MS Clinic
- Multiple Sclerosis Psychotherapy Clinic
- Neuro-Rheumatology Clinic
- Neurosarcoidosis Clinic
- Quality of Life (QOL) Multiple Sclerosis Clinic
- Multiple Sclerosis
   Multidisciplinary Symptom
   Management Clinic
- Multiple Sclerosis Fatigue/Sleep Clinic
- Amyotrophic Lateral Sclerosis/ Motor Neuron Disease Multidisciplinary Clinic and Research Program
- Muscular Dystrophy Association Clinic
- Myasthenia Gravis (MG) Clinic
- Myositis Clinic
- Neurocutaneous Syndrome Clinic

For more information, please visit our Multidisciplinary and Subspecialty Neurology Clnics page

# **Academic Symposia**

# **Neurogenetics Symposium**

The Neuroscience Research Institute and Department of Neurology hosted a Virtual Neurogenetics Symposium from September 23-24th. Local OSU experts, and thought leaders from Yale, UCSF, Northwestern, Baylor, the University of North Carolina and Nationwide Children's Hospital, gave talks on recent developments in the genetics of Alzheimer's Disease, ALS/ Frontotemporal dementia, Epilepsy, Multiple Sclerosis, Parkinson's Disease and Hereditary Dystonias.

# **Neuroimaging Symposium**

The OSU Neuroimaging Research Symposium was held in person, on campus, between October 28-29th, 2022. The plenary speaker was Rory Pilgrim from Google Health who discussed "Three Myths of Artificial Intelligence & Medical Imaging." Thematically focused sessions included *Advances in the Imaging of Neurodegenerative Disease, Radiological Assessment of Stroke,* and *Ocular Imaging in Neurological Diagnosis & Management.* Other external speakers were Chales DeCarli (UC Davis), William August (UC Berkley) and Greg Albers (Stanford University). The symposium also featured a poster session, highlighting the research of our learners and junior faculty.

# **Advance Practice Provider Symposium**

Our department held a groundbreaking Neurology Advanced Practice Provider Symposium on May 20th, 2022, on campus at the Fawcett Event Center. The event, entitled *Neurology Pharmacology Made Simple: 1st Annual Update for Advanced Practice Providers*, was developed by the Neurology APP team at OSU, under the leadership of Lucretia Long, APRN-CNP, FAES (Epilepsy Division) and Kristi Epstein, MSN, APRN-CNP, CCRN (Multiple Sclerosis Division). It featured didactic presentations by our very own Clarisse Goas (Movement Disorders), Noah Grose (Neurovascular), Renee Kovesci (Neurocognitive), and Lucretia Long (Epilepsy), as well as by two nationally renowned external speakers, Calli Cook, NP, DNP, APRN (Emory Brain Health Center) and Laurel Short, DNP (Sunflower Medical). Registration fees were waived for students in APP training programs throughout the country. The symposium was a huge success, with close to **500 registrants** (130 attended on site and 370 participated via a virtual platform) from **29** states. We are now committed to holding this symposium annually! Workshops and a poster session will be new additions in 2024.

# Annual Updates in Neurology Symposium

Our department hosted our first annual *Updates in Neurology Symposium for Community Providers* on January 21st, 2023. This CME-accredited event provided information on the latest diagnostic guidelines and clinical management approaches for a range of common neurological diseases and conditions, including headache, memory disorders, Parkinson's Disease, neuropathy, multiple sclerosis and epilepsy. Each talk was given by a division leader in the OSU Department of Neurology. The symposium also featured a panel discussion about ongoing and emerging clinical trials in neurotherapeutics. There were **120** registrants. If you would like to view the presentations, please click here!

# **Diversity, Equity, and Inclusion Symposium**

The OSU Neurology DEI symposium is under development. It will bring together local and national leaders in neurology, clinical/basic science/translation research and trainees (students, residents and fellows) to discuss and identify solutions to health care disparities in Neurology, as well as the underrepresentation of minority populations in Neurology clinical trials and studies. There will be a strong emphasis on mentorship of trainees, particularly those from groups that are underrepresented in our field.







2023 Ohio State Neurology Update

A comprehensive review for clinicians January 21<sup>st</sup>, 2023 – Fawcett Center



# **Capital Projects**



#### **New Inpatient Tower**

The Ohio State University Wexner Medical Center is currently constructing a state-of-the-art inpatient hospital that, when finished, will feature 1.9 million-square feet of space and up to 820 private-room beds. Two floors of the new hospital will be dedicated to patients with neurological disorders. This includes a 30-bed neurocritical care unit and a 30-bed inpatient stroke ward, as well as our epilepsy monitoring unit, and a new General Neurology inpatient service. The construction is scheduled to be completed in 2026.

#### **Outpatient Care New Albany**

In the fall of 2021, Ohio State opened up a state-of-the-art ambulatory facility in New Albany. The project added **251,000** square feet of clinical space. Neurology has a significant footprint at this brand-new facility, as well as access to an additional infusion suite at Ohio State.

#### **Outpatient Care Gahanna**

In 2020, our department made the decision to refresh our clinic space in the Gahanna facility. We converted a decommissioned infusion suite into **6** additional clinic rooms and a large physician work room, as well as lab space for the collection, processing and storage of biospecimens to facilitate our translational research efforts. The renovation in Gahanna helps to serve our growing clinical volume and to accommodate our expanding clinical faculty and APPs.

#### **Outpatient Care Dublin**



Our brand-new ambulatory site in Dublin opened in August of 2022. The structure is **272,000** square feet and offers services including ambulatory surgery, endoscopy, primary care, specialty medical and surgical clinics, and related support spaces. Our department's clinic is located on the fifth floor.

#### **Interdisciplinary Research Facility**



The Ohio State University has invested in a five-story laboratory building on West Campus, named the Interdisciplinary Research Facility (IRF). This **305,000** square foot building will support a multitude of different research disciplines, including neurology and neuroscience. The plan is for many of our faculty in the Neurobiology of Aging & Resilience Center to be relocated to the ORF. It is projected to open in June of 2023.

# **Diversity, Equity, and Inclusion Initiatives**



In 2019, the Department of Neurology at Ohio State developed a Diversity, Equity, and Inclusion (DEI) Committee charged with developing targeted action items to enhance DEI across recruitment, education, research, and clinical operations. Dr. Tirisham Gyang is our Vice Chair of DEI. Under her visionary leadership, the following initiatives and programs are thriving:

**The Columbus Free Neurology Clinic** – Our department forged a partnership with the broader Columbus Free Clinic to offer a specialty clinic specifically dedicated to neurological conditions. This clinic provides diagnostic services, healthcare, and some prescription medications to uninsured individuals in Central Ohio who have epilepsy, headache, MS, and neuropathy, among other conditions. The clinic is staffed by Neurology residents and interested medical students, and overseen by volunteer fellows and faculty members. The Free Neurology Clinic enriches training, increases learners' awareness of healthcare inequities, and instills values of empathy and social justice, while increasing healthcare access to patients in the area who have limited options.

**Grand Rounds** – We dedicate four slots in our Grand Rounds series for talks on DET issues by national leaders. In FY22, talks were given on *Health disparities in stroke; The use of big data to understand and improve neurological disease burden, outcomes and disparities; Race, racism and racebased neurodisparities;* and *The health of LGBTQ people and populations conceptualized as a syndemic of infectious and chronic disease.* 

**Grants and Awards** – The American Academy of Neurology (AAN) IDEAS Innovator Grants Program supports projects, events and activities that foster IDEAS (Inclusion, Diversity, Equity, Anti-racism and Social Justice) within academic neurology departments or the communities they serve. Our very own Dr. Em Harrington was awarded a 2023 AAN IDEAS Innovator Grant to support the development of sexual and gender minority educational resources for Neurology departments. Dr. Harrington piloted these educational materials with a group of second year medical students in the context of a three-day course titled "Advanced Topics for the Care of Gender Diverse Patients", that was offered in the fall of 2022. They will be presenting a poster "Developing Transgender Cultural Competency, Development of a Medical Student Selective Course to Address Knowledge Gaps Around Gender Diverse Patient and Colleagues" at the 2023 College of Medicine Annual Education Symposium.

Women and Gender Minorities in Neurology Mentorship Group - This group was established in our department with the purpose of championing the success and career goals of women and gender minorities in the Department of Neurology. It is centered on mentorship and career development activities for trainees and young faculty from under-represented groups provided by role models with similar backgrounds.

**Patient Education and Community Engagement** – All of the divisions within the department of Neurology engage in free education events for people with neurological diseases and their caregivers, including webinars and in person symposia and talks. These events provide an opportunity for people from our community to interact with subspecialty neurologists, APPs and or multi-disciplinary clinical teams. As an example, the MS division hosts a quarterly webinar for patients that features rotating topics, such as *COVID and MS, How to Choose a Disease Modifying Therapy*, and *Emerging and Ongoing MS Clinical Trials*.

**Pipeline Development** – In FY22/23, the DEI Committee launched a *Pathways to Neurology Program*. Its primary mission is to inspire persons from under-represented groups to consider careers in Neurology and Neuroscience. Our Pathways Program sponsors and coordinates outreach events and talks at local high schools, webinars for first generation college graduates and medical students, and OSU Neurology interest groups and workshops for our own undergraduates and medical students. A Neurology Sizzle Reel was created in collaboration with Marketing to enhance our efforts in generating interest in neurology as a career. The annual *OSU Exploration in Neuroscience Camp and MD Camp*, is an on-campus educational and professional development activity designed for high school juniors and seniors, with an emphasis on students who are typically underrepresented in Neurology and Neuroscience.

**Neurology Health Care Disparities Journal Club** – As part of our commitment to educate Neurology faculty and learners about gaps and inequities in healthcare access, delivery, and quality in our field, the Department created a quarterly journal club series focused on healthcare disparities across populations with neurological diseases. This series has already inspired a number of research projects among our residents with faculty in the Division of Neurology Health Services Research.

# **Research Spotlights**

#### **Research Focus**



Bogdan Beirowski, MD, PhD Associate Professor, Neurology

**Academic Page** 

Dr. Beirowski's lab studies the molecular and cellular mechanisms that regulate axon degeneration, a hallmark of many neurological disorders. A major focus is on the role of bioenergetics in Wallerian degeneration, and metabolic shunting between axons and glia.

#### **Recent discoveries**

The Beirowski lab recently discovered that when peripheral axons are injured, Schwann cell glia almost immediately reprogram their metabolic pathways. The Schwann cells act as an "emergency response team" that delivers an extra supply of special sugars to axons in need. This sugar-boost makes harmed axons stronger and allows them to recover and regenerate more effectively. We hope that this discovery will lead to novel therapies that enhance the transfer of sugars and other energy sources to damaged axons, helping to keep them alive in people with peripheral nerve injury and peripheral neuropathy.

#### **Original Source Article:**

Babetto, E., Wong, K. M., and Beirowski, B. 2020. A glycolytic shift in Schwann cells supports injured axons. Nature Neuroscience. 23:1215-28. doi: 10.1038/s41593-020-0689-4

#### **Research Focus**



Nandini Acharya, PhD Assistant Professor, Neurology

Acharya Lab Page

Glioblastoma multiforme (GBM) is the most prevalent type of primary malignant brain tumor in adults. Despite optimal surgical resection and chemo-radiation, the prognosis remains poor, underscoring the dire need for novel therapies. Immune checkpoint blockade therapy (ICB), which is designed to bolster anti-tumor immune responses, has led to remarkable therapeutic outcomes in several cancer types. However, GBM patients remain highly refractory to ICB. One of the characteristic features of the GBM tumor microenvironment (TME) is the prevalence of a highly immunosuppressive cellular network that curtails the generation of an effective anti-GBM immune response. A deeper understanding of the crosstalk between the various cell types in the TME that shape the anti-tumor immune responses is critical for delineating and reprogramming these immune suppressive circuits. Neurons are an important component of the GBM TME; communication between neurons and tumor-infiltrating cells is an important component of brain tumor pathophysiology. The role of bidirectional neuronal-immune cross-talk in regulating anti-GBM immune responses is unknown. A major goal of Dr. Acharya's research program is to decipher the molecular determinants of maladaptive neuronal-immune interactions in the TME of GBM, and to target those circuits to enhance anti-GBM immunity.

#### **Recent Discoveries**

One of the mechanisms by which neurons regulate immune responses is through the release of neuropeptides. Calcitonin gene-related peptide (CGRP) is a peptide produced by neurons within the tumor bed of GBM. Using published datasets, Dr. Acharya found that the receptor for CGRP is highly expressed by GBM-infiltrating cells that have potential immunosuppressive properties. Furthermore, high expression of the CGRP receptor correlated with reduced overall survival in GBM patients. Using pharmacological blockade and genetic ablation techniques, the Acharya lab is investigating the role of CGRP signaling in shaping antitumor immune responses in murine models of GBM. In preliminary experiments, blockade of CGRP improved survival in mice with GBM, putatively by boosting anti-GBM immunity. This is exciting, since CGRP antagonists that are currently FDA approved for the management of migraine, could potentially be repurposed to enhance anti-GBM immune responses, either alone or in conjunction with ICB, thereby providing a novel therapeutic approach to GBM.

# New Department Faculty in FY23



Pietro Mazzoni, MD, PhD Associate Professor/ Division Co-Director Movement Disorders



Zachary Jordan, MD Assistant Professor Movement Disorders



Maryam Mian, MD Assistant Professor Neurohospitalist/ Teleneurology



Rami Ibrahim, MD Assistant Professor Neurohospitalist/ Teleneurology



Allison Jordan, MD Assistant Professor Multiple Sclerosis/ Teleneurology



Ana Verdecia, MD Assistant Professor Headache



Matt Burford, MD Assistant Professor Neuromuscular



Mary Petrulis, MD Assistant Professor Neuromuscular



Mhd Ezzat Zaghlouleh, MD Assistant Professor Neurocritical Care



Jan Bittar, MD Assistant Professor Neurocritical Care



Xiaojun Zhang, MD Assistant Professor Multiple Sclerosis/ Neuro-ophthalmology



Rolanda Robinson, PhD Assistant Professor Neuropsychology



Andrew Bryant, PhD Assistant Professor Neuropsychology



Rochelle O'Neil, PhD Assistant Professor Neuropsychology



Bogdan Beirowski, MD, PhD Associate Professor Research



Elisabetta Babetto, PhD Assistant Professor Research



# **Ohio State University Wexner Medical Center**

#29 in Neurology & Neurosurgery

# U.S. News & World Report Scorecard

#### **Outcomes and Experience**

30-day survival	Excellent
Discharging patients to home	Excellent
Patient experience	Above Average
Number of patients	Excellent

### Key Programs, Services and Staff



#### **Professional Recognition**

Recognized as Nurse Magnet hospital	✓
NAEC-designated epilepsy center	✓
NIA-designated Alzheimer's center	-
Expert opinion	

### Voting

The window has officially opened for the 2023-2024 USNWR ranking cycle. Please consider voting for the Ohio State University Department of Neurology as one of your top programs. All voting is conducted via Doximity. You should receive an email prompting you to vote but you can also complete your voting directly on the Doximity website by utilizing the blue notifications bell at the top of the screen. If you do not have an account, you are still eligible to vote by setting up a Doximity profile before the voting cycle ends. If you have issues with voting, please reach out to Support@doximity.com and they can assist you with the process.